A Community-Level HIV Prevention Intervention for Inner-City Women: Results of the Women and Infants Demonstration Projects

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ABSTRACT

Objectives. This study examined the effects of a multisite community-level HIV prevention intervention on women's condom-use behaviors.

Methods. The theory-based behavioral intervention was implemented with low-income, primarily African American women in 4 urban communities. It was evaluated with data from pre- and postintervention cross-sectional surveys in matched intervention and comparison communities.

Results. At baseline, 68% of the women had no intention of using condoms with their main partners and 70% were not using condoms consistently with other partners. After 2 years of intervention activities, increases in rates of talking with main partners about condoms were significantly larger in intervention communities than in comparison communities ($P = .03$). Intervention communities also had significant increases in the proportion of women who had tried to get their main partners to use condoms ($P = .01$). The trends for condom use with other partners were similar but nonsignificant.

Conclusions. Many women at risk for HIV infection are still not using condoms. Community-level interventions may be an effective way to reach large numbers of women and change their condom-use behaviors, particularly their behaviors with regard to communication with main sex partners. (*Am J Public Health*. 2000;90: 216–222)

AIDS cases are currently increasing faster among women than among men in the United States.[1,2] In 1997, 22% of all reported adult cases of AIDS were in women; of these, 60% were in African American women.[3] AIDS is the third leading cause of death among all women aged 25 to 44 years and the number one cause of death among African American women in the same age group.[4] Heterosexual transmission is responsible for increasing numbers of AIDS cases in women, accounting for 38% of cases in 1997, compared with 14% in 1987.[3,5] Use of the male latex condom continues to be the primary means of preventing heterosexual transmission of HIV.[6–8] Nevertheless, condom use is relatively low among male partners of women at risk for HIV infection[9–14] and is partner-specific: rates of use are lower with main or steady partners than with other partners, even when the main partner uses drugs or has other HIV risk characteristics.[1,15–17]

Most HIV prevention interventions for women have used individual and small-group behavior change techniques.[18–22] These interventions have resulted in increased condom use by inner-city women in primary care settings[23] or at mental health clinics[24] and in young women living in economically disadvantaged neighborhoods.[21] It is essential that community-level prevention efforts be used to reach a larger proportion of women at risk in a wider variety of settings.[17,25] Community-level interventions disseminate health promotion messages that are designed to influence individual behavior change as well as to strengthen the social norms that support and reinforce such change.[26] They have the potential to reach populations that are difficult to identify and recruit for individual-level interventions, including people who are unaware that they are at risk for HIV infection[27] (e.g., sexually active women who are not aware of their partners' risk). Community-level HIV prevention interventions have increased condom use among gay men[25,28] and show promise for reducing risk behaviors among female commercial sex workers and the female sexual partners of injection drug users.[17]

The Prevention of HIV in Women and Infants Demonstration Projects (WIDP), which ran from 1991 through 1996, developed one of the first multisite community-level HIV prevention intervention trials specifically targeting women in the United States. The theory-based behavioral intervention was implemented with low-income, primarily African American women in 4 inner-city communities and was evaluated with annual cross-sectional surveys in matched intervention and comparison communities. The WIDP intervention, which aimed to increase positive community norms, attitudes, and behaviors concerning condom use among women at risk for HIV infection, was an expansion of strategies developed by the AIDS Community Demonstration Projects.[29,30] Both interventions applied constructs from the transtheoretical model of behavior change,[31–33] from the social learning theory,[34,35] and from the diffusion-of-innovation model.[36]

Using the stages of change, which are the foundation of the transtheoretical model, we designed the intervention to reach women

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at different levels of readiness to adopt condom use and help them move to a higher stage.[37] The 5 stages as defined for this project are (1) *precontemplation* (not even thinking about using condoms); (2) *contemplation* (intending to use condoms in the next 6 months); (3) *ready for action* (using condoms inconsistently, with the intention to use them consistently in the next 30 days); (4) *action* (using condoms consistently for 1 to 5 months); and (5) *maintenance* (using condoms consistently for at least 6 months). For women in the precontemplation stage, intervention messages encouraged thinking and talking about the possibility of using condoms; for women in the readiness for action stage, messages supported consistent use.

We examined the effects of the WIDP intervention on women's condom-use behaviors with their main partners and with other sex partners. Using data collected at baseline and at follow-up 3 years later, we tested the hypothesis that the intervention would increase women's condom-use behavior. We did this by comparing the outcomes for women in intervention communities with the outcomes for women in comparison communities, regardless of exposure to the intervention. We then examined the effect of exposure to the intervention by comparing the outcomes for women in the intervention communities who reported being exposed to the intervention with the outcomes of women in the comparison communities who reported no exposure.

Methods

Study Design

The WIDP intervention was implemented in 4 communities in 3 metropolitan areas: 2 public housing communities in Pittsburgh, a low-income neighborhood in West Philadelphia, and a group of inner-city neighborhoods in Portland, Ore. Two other communities that had been a part of the original plan for the WIDP were unable to implement and maintain the intervention protocol because of local circumstances and therefore did not participate in the collection of outcome data. Baseline data collected on women at these 2 sites showed that they did not differ from the women at the participating sites in terms of risk characteristics.

During a year of preliminary research, women, community leaders, and service providers were interviewed to identify possible intervention locations and specific risk behaviors to be targeted. Using this information, investigators defined the boundaries of the intervention communities and selected suitable comparison communities. Practical and political considerations, such as the location of collaborating community organizations, made it impossible to randomly assign communities to treatment conditions.

In each city, after the intervention community had been selected, a matched comparison community was chosen. The criteria for selection of intervention communities were (1) presence of women at high risk, as indicated by high rates of drug use and sexually transmitted diseases (STDs); (2) suitable community size (1000 to 4000 eligible women); and (3) presence of few, if any, HIV prevention activities. Comparison communities were chosen to be as similar as possible to the intervention communities on these 3 measures. In addition, census data were used to make sure that intervention and comparison communities were comparable in age distribution, racial composition, and economic status. The matched sites also had to be geographically distant enough to limit possible contamination.

Independent cross-sectional surveys were conducted annually from 1993 through 1996 in the intervention and comparison communities. Intervention elements were phased in after the 1993 survey, and the full-scale intervention was in place during 1994 and 1995. For the analyses presented here, data from 1836 women interviewed for the baseline survey in 1993 were compared with data from 1889 women interviewed in 1996 to assess the cumulative effect of more than 2 years of intervention activities.

The Intervention

The community-level intervention targeted sexually active women of childbearing age. It consisted of multiple activities conducted throughout the community to reach a large number of women through repeated contacts. These activities consisted of the development and distribution of project-produced HIV prevention materials; the mobilization of a peer network of community volunteers and a network of community organizations and businesses that supported the project; and the delivery of prevention messages by trained outreach specialists through individual contacts and small-group activities.

Theory-based, culturally specific HIV prevention materials called role-model stories were developed by a trained staff person in each intervention community. The role-model stories, derived from in-depth interviews with women in the community, described how these women had overcome barriers or had learned from experience about the need to use condoms.[38] Each story illustrated movement from a specific stage of behavior change to a higher stage. The proportion of stories developed for each of the 5 stages was determined by the proportion of community women in that stage at baseline. In each community, 33 to 48 role-model stories were produced and 100000 to 350000 copies of the stories, formatted as fliers, brochures, posters, and newsletters, were distributed to women by project staff and at designated community distribution sites.

Community mobilization entailed the recruitment of a group of volunteers to form the peer network.[39,40] They were trained to provide HIV prevention information and referrals and to distribute role-model stories and condoms to their friends, neighbors, and other women in the community. A peer network might consist of 10 to 30 volunteers at any one time during the project. In addition, small businesses, neighborhood organizations, and social agencies were recruited as distribution sites for role-model stories and condoms, display sites for other HIV prevention materials, and host sites for workshops and other activities. In each community, 123 to 182 businesses and organizations participated in the project.

In each city, 4 full-time outreach specialists were trained to provide individually tailored messages to women in the community. They encountered women on the street and in other community settings, asked about their condom-use behavior and intentions, and provided them with oral messages appropriate to their stage of change, as well as role-model stories and condoms. The outreach specialists also conducted safer-sex parties and community workshops.

Selection of the Sample

To evaluate the community-level intervention, we used a 2-stage sampling plan to select women aged 15 through 34 years who had been sexually active in the past 30 days. In the first stage, a sampling frame of locations such as restaurants, shops, bars, community agencies, bus stops, residential areas, and parks was constructed for each community, and microsites were randomly selected from this list. In the second stage, interviewers followed site-specific sampling strategies to select individual women found in these locations. A total of 225 to 240 women were interviewed in each intervention and comparison community during each survey wave. Power calculations were based on the assumption of a base rate of 50% condom use, an effect size of 0.10, and a minimum of 5 pairs of communities (power = 80%, $\alpha = .05$, 1-tailed).

Because of differences between cities in the likelihood of locating women with risk characteristics, site-specific screening criteria

were used. In Portland, women were interviewed if they had, in the past 5 years, participated in a high-risk behavior such as injecting drugs, having multiple sexual partners, or having a partner who injected drugs. In Pittsburgh, no high-risk screening was used in 1993; from 1994 to 1996, a screening procedure similar to Portland's was used to increase the number of women at high risk who were interviewed. In Philadelphia, microsites were selected randomly in 1993; from 1994 to 1996, an oversampling of microsites frequented by women at higher risk was implemented. These procedures were part of an effort to maintain across-site consistency between the sample surveyed and the intervention's target population. Adjustments to sampling strategies were statistically accounted for during data analysis.

Data Collection

For the outcome evaluation, a standardized interview instrument was used at all study sites. The questionnaire was administered by trained interviewers recruited from the intervention and comparison communities. The interviews were anonymous (i.e., no names or addresses were recorded). Respondents gave oral consent to be interviewed and received an incentive of $10 to $15 for their time. Nonparticipation rates in each community ranged from 30% to 58% of the women approached. According to interviewers' records, a large proportion of refusals were from women who were willing to be interviewed but did not have time at that moment. To maintain respondents' anonymity, the sampling design did not allow callbacks or rescheduling. Of the women interviewed in 1996, 18% reported that they had been interviewed during a previous data collection wave.

Outcome Measures

Condom-use behavior was assessed by respondents' self-reports of condom use with a main partner and, when applicable, other partners. A main partner was defined as a husband or boyfriend; other partners were defined as male sexual partners other than a husband or boyfriend. *Condom use during most recent sex* was measured by a single item: "The last time you had vaginal sex with your (main/other) partner, was a condom used?" *Reported frequency of condom use* was measured by the question "When you have vaginal sex with your (main/other) partner, how often do you use a condom?" For this analysis, we examined the proportion of respondents who reported never using condoms. *Consistent condom use,* defined as using condoms every time and having practiced this behavior consistently for at least the past 30 days, was measured by the question "How long have you been using a condom every time you have sex with your (main/other) partner?" *Attempting to get partner to use a condom* was measured by the question "In the past 30 days, have you ever tried to get your (main/other) partner to use a condom?" This question was asked only of women who were not using condoms consistently. *Frequency of talking with partner about using condoms,* asked only for a main partner, was measured by the question "How often do you talk with your main partner about condoms?" We analyzed the prevalence of never talking with a main partner about using condoms.

Exposure to the intervention was measured by a positive response to any of 5 items on the 1996 survey: (1) mention of project-related material or messages in response to the question "In the past 3 months, have you seen or heard anything around here in the community about condoms or how to protect yourself from HIV or AIDS? [If yes] What did you see or hear?"; (2) recognition of project material in response to the question "Have you seen this type of story before?"; (3) a positive response to the question "In the past few years, have you spoken to anyone from this project?"; (4) reported attendance at a project-sponsored gathering such as a safer-sex party or workshop; (5) reported participation as a project volunteer.

Statistical Analyses

Intervention effects were assessed by statistical methods that account for community as the unit of treatment assignment.[41] In this model, change scores between post- and pre-intervention sampling waves were computed for each community. The intervention effect is the average difference between change scores for matched intervention and comparison communities. The use of change scores mitigated potential bias due to baseline differences in outcome measures between intervention and comparison samples. The statistical significance of the intervention effect was evaluated with a 1-tailed *t* test and a significance level of .05.

For each outcome variable, the significance of the intervention effect was examined with and without multivariate statistical adjustments for demographic and socioeconomic variables. Propensity scores[42] were used to correct for imbalances between intervention and comparison communities in respondents' demographic, socioeconomic, and risk characteristics at baseline and follow-up. Respondents were divided, on the basis of their propensity scores, into 5 strata. These strata were entered in regression equations that predict the outcome variables. We then computed residuals by subtracting observed values from fitted values, effectively eliminating differences attributable to membership in different strata. These residuals were used in the change score analysis already described.

Results

Characteristics of the Sample

The mean age of the women interviewed for the study was 25 years; most were African American (73%), and most had received income from public assistance in the past year (65%) (Table 1). Many of the women had characteristics that placed them at increased risk for HIV infection: 10% had injected drugs; 43% had used street drugs in the past 6 months; 27% had had 2 or more sexual partners in the past 6 months; 17% had exchanged sex for money, drugs, or other things; and 38% had been told they had an STD. Despite differences between baseline and follow-up samples for a few of these variables, changes over time were not significantly different for intervention and comparison communities (Table 1). At baseline, 68% of the women had no intention of using a condom with their main partners, while 13% had consistently used condoms with their main partners for 1 month or more. Women used condoms more frequently with other partners: 33% had no intention of using condoms, and 30% had used condoms consistently.

Effects of the Intervention on Condom Use

To examine the overall effect of the intervention on the community, we compared the change over time in condom use by women in the intervention communities and women in the comparison communities. Significant intervention effects were found for 2 of the 5 measures of condom use with a main partner, with 1 additional borderline effect (Table 2). *Attempting to get partner to use a condom* increased 11 percentage points more for women in intervention communities than for those in comparison communities ($P = .01$). *Never talking with main partner about condoms* decreased 13 percentage points more ($P = .03$) and *never using condoms* decreased 9 percentage points more ($P = .054$) for women in intervention communities than for those in comparison communities. There were no intervention effects for *condom use during most recent sex* or for

TABLE 1—Demographic and Risk Characteristics (%) of Women in Intervention and Comparison Communities, at Baseline (1993) and at Follow-Up (1996): Prevention of HIV in Women and Infants Demonstration Projects

	Total Sample (n = 3722)	Intervention Baseline (n = 883)	Follow-Up (n = 918)	Comparison Baseline (n = 951)	Follow-Up (n = 971)	P[a]
African American	73.1	77.0	75.6	73.4	67.3	.17
Never married	71.1	65.9	74.2	68.2	76.0	.47
Education < high school	36.9	31.9	37.6	35.9	41.9	.42
Live with spouse or partner	39.3	39.3	35.0	42.9	39.9	.44
Live with children aged <18 y	73.9	73.6	74.2	73.9	74.2	.46
Income from job	52.0	55.3	58.3	42.4	52.4	.10
Income from public assistance	65.2	59.5	63.5	67.4	70.2	.44
Have a main sexual partner	87.9	84.8	90.7	85.3	90.5	.43
Have 1 or more other partners	21.5	25.1	21.1	21.6	18.7	.22
Have both main and other partners	9.4	9.8	11.9	6.9	9.3	.45
Ever tested for HIV	67.2	57.8	79.4	54.7	77.8	.33
Injected drugs						
Ever	9.8	11.2	8.0	10.4	9.8	.27
Past year	6.0	7.7	5.2	6.1	5.3	.32
Used street drugs in past 6 mo	42.7	35.3	52.1	35.9	47.6	.26
Ever exchanged sex for money or drugs	17.0	18.4	17.6	15.8	16.5	.30
Ever had sexually transmitted disease	38.4	39.8	36.7	40.4	37.0	.47
Surgically sterilized	29.6	28.6	30.8	32.2	27.2	.08
Ever been pregnant	79.8	80.1	79.9	81.8	77.7	.09
Last pregnancy unplanned	56.4	57.4	56.1	55.4	56.9	.16

[a]Statistical significance of difference in change scores for intervention and comparison communities.

TABLE 2—Intervention Effects on Condom Use in Intervention and Comparison Communities: Prevention of HIV in Women and Infants Demonstration Projects

	Intervention Communities, %		Comparison Community, %			Adjusted Scores[a]	
	Baseline	Follow-Up	Baseline	Follow-Up	Intervention Effect (90% CI)	Intervention Effect (90% CI)	P
Main partner	(n = 737)	(n = 825)	(n = 797)	(n = 870)			
Condom use during most recent sex	26.9	42.7	26.8	39.6	2.7 (–3.8, 9.2)	2.8 (–3.7, 9.3)	.20
Never use condoms	49.9	28.1	47.7	35.1	–8.9 (–18.4, 0.6)	–9.0 (–18.4, 0.3)	.05
Consistent use, past 30 days	14.3	25.5	12.4	25.1	–0.6 (–9.8, 8.6)	–0.6 (–9.7, 8.4)	.44
Attempting to get partner to use condoms	12.7	25.7	16.0	17.9	11.0 (4.8, 17.2)	10.6 (4.3, 16.9)	.01*
Never talk to partner about condoms	41.0	23.2	36.9	32.1	–12.6 (–23.3, –1.9)	–12.6 (–23.2, –2.0)	.03*
Other partners	(n = 215)	(n = 194)	(n = 205)	(n = 181)			
Condom use during most recent sex	56.7	77.3	56.7	62.0	11.8 (–12.1, 35.5)	12.3 (–10.9, 35.5)	.15
Never use condoms	17.7	7.2	15.6	12.7	–6.5 (–17.1, 4.2)	–6.0 (–17.4, 5.3)	.15
Consistent use, past 30 days	32.5	54.4	28.4	38.3	7.7 (–10.5, 25.9)	8.0 (–9.0, 25.0)	.18
Attempting to get partner to use condoms	28.9	44.7	36.4	31.0	26.5 (–7.1, 60.1)	23.4 (–15.0, 61.8)	.12

Note. CI = confidence interval.
[a]Results adjusted with propensity scores to account for differences between groups in demographic characteristics.
*One-tailed *P* values < .05.

consistent condom use; however, these measures showed increases from baseline to follow-up for women in both intervention and comparison communities.

We found no significant intervention effects for measures of condom use with other partners. Women in intervention and comparison communities reported increased condom use from baseline to follow-up. Although significant intervention effects were found for only 3 of the 9 outcome measures, 8 measures showed intervention effects in the direction of more positive change in the intervention communities. The results of a post hoc sign test indicate that the probability of finding this proportion of positive effects by chance is very small ($P = .002$).

Effects of Exposure to the Intervention on Condom Use

To examine more directly the effect of the intervention on the women reached by the program, we compared changes in condom use for women in the intervention communities who reported exposure to the intervention with changes for women in the

TABLE 3—Effects of Exposure to Intervention on Condom Use (Exposed Women in Intervention Communities vs Unexposed Women in Comparison Communities): Prevention of HIV in Women and Infants Demonstration Projects

	Intervention Communities, %		Comparison Communities, %			Adjusted Scores[a]	
	Baseline	Follow-Up	Baseline	Follow-Up	Exposure Effect (90% CI)	Exposure Effect (90% CI)	*P*
Main partner	(n = 737)	(n = 538)	(n = 797)	(n = 686)			
Condom use during most recent sex	26.9	47.6	26.8	39.1	7.9 (–3.3, 19.1)	8.0 (–3.3, 19.3)	.10
Never use condoms	49.9	23.6	47.7	35.9	–13.9 (–25.0, –2.8)	–14.1 (–25.1, –3.1)	.03*
Consistent use, past 30 days	14.3	29.0	12.4	24.5	3.4 (–3.4, 10.2)	3.2 (–3.3, 9.7)	.17
Attempting to get partner to use condoms	12.7	28.9	16.0	17.1	14.2 (0.8, 27.6)	14.2 (0.6, 27.8)	.04*
Never talk to partner about condoms	41.0	19.7	36.9	32.9	–16.8 (–28.4, –5.1)	–16.8 (–28.5, –5.2)	.02*
Other partners	(n = 215)	(n = 121)	(n = 205)	(n = 136)			
Condom use during most recent sex	56.7	78.5	56.7	58.5	17.5 (–1.6, 36.7)	17.7 (–1.0, 36.4)	.06
Never use condoms	17.7	8.3	15.6	16.9	–9.9 (–19.7, –0.2)	–9.3 (–19.8, 1.2)	.06
Consistent use, past 30 days	32.5	54.5	28.4	35.6	12.8 (–3.9, 29.5)	12.7 (–3.2, 28.6)	.08
Attempting to get partner to use condoms	28.9	51.8	36.4	27.1	39.9 (18.0, 61.9)	36.5 (8.9, 64.0)	.03*

Note. CI = confidence interval.
[a]Results adjusted with propensity scores to account for differences between groups in demographic characteristics.
*One-tailed *P* values < .05.

comparison communities who reported no exposure. In the 1996 follow-up survey, 64.4% of the women from the intervention communities reported exposure to the WIDP intervention and 78.6% of the women in the comparison communities reported no exposure. Of the 5 measures of condom use with a main partner, 3 showed significant effects of exposure (Table 3). The significant variables were the same as those in the earlier analysis; however, in every instance the effect was stronger for the exposed group than for the total sample in the intervention communities.

One of the 4 measures of condom use with other partners indicated significant effects of exposure, and 2 others indicated borderline effects. *Attempting to get partner to use a condom* increased 37 percentage points more ($P = .03$) for women exposed to the intervention than for unexposed women. *Condom use during most recent sex* increased 18 percentage points more ($P = .06$) and *never using condoms* decreased 9 percentage points more for exposed than for unexposed women ($P = .06$).

Discussion

The WIDP intervention was successful in reaching a large number of women with HIV prevention messages. Of the women surveyed in the intervention communities, 64% recalled having read project materials and/or having talked with someone from the project. Although the sample may not be representative of the approximately 10 000 women who resided in the intervention communities, our findings, along with process data on intervention implementation, indicate that the program reached several thousand women. The program was well received by community leaders, businesses, and residents, as evidenced by the large number of participating organizations, the enthusiasm of the community volunteers, and the amount of material distributed.[40,43]

The WIDP intervention was effective in encouraging women to discuss and initiate condom use with their main partners. These skills were particularly pertinent to the 68% who, at baseline, were not using condoms consistently and had no intention of doing so. Although the intervention did not have a direct effect on consistent condom use, an increased willingness to discuss the subject and to initiate use may lead to future movement along the stages of change toward increased consistent use of condoms with the current main partner or with future partners.[44] These findings are similar to those of another community-level intervention that demonstrated significant effects on the formation of intentions to use condoms with a main partner.[29]

The intervention was not significantly associated with increased condom use with other partners, although all observed effects were in the direction of greater positive change for women in the intervention communities than for women in the comparison communities. Limited power to detect differences, because of the small proportion of women who reported having other sexual partners and the relatively small number of community pairs, may account for the lack of significant findings. The study's overall power to detect significant intervention effects was adversely affected by the early loss of 2 pairs of communities. The relatively low power to detect significant results is shared by other community-level interventions.[45,46]

Our findings suggest that community-level interventions may need to be implemented and evaluated over several years before increases in condom use become evident. Post hoc analyses of the 1994 and 1995 follow-up surveys found no intervention effects on condom-use behavior. The WIDP intervention effects were not discernible until the 1996 survey, more than 2 years after the intervention was implemented. The transtheoretical model, by describing the various processes needed for someone to move along the stages of change, helps explain why behavior change is often a lengthy process.[32]

One factor that made it difficult to document significant intervention effects was the increase in condom use in the comparison communities. Part of this effect may be due to contact with the WIDP intervention. More than 20% of the women in the comparison communities reported some intervention exposure, despite efforts to prevent the distribution of project materials outside the target community. However, contamination is not the only explanation, as condom use increased even for women who reported no exposure, perhaps reflecting the dissemination of AIDS prevention messages through

the media and community health centers. In the mid-1990s, the focus of HIV/AIDS prevention messages widened to include heterosexual transmission and began to focus on women. The WIDP intervention was part of this general trend, making it difficult to measure separately the effects of this specific intervention.

In addition to the problem of insufficient power, the study design was affected by limitations common to applied research projects. The chosen communities were not randomly assigned to treatment conditions, although the matching of intervention and comparison communities was an attempt to mitigate the effects of selection bias. The use of change scores to assess intervention effects lessened the possibility that findings resulted from initial bias in choosing intervention and comparison communities. The validity of the study's outcomes may also have been threatened by postbaseline changes in the sampling strategy in Pittsburgh and Philadelphia. However, the changes in sampling procedures were the same in intervention and comparison communities. In addition, multivariate analyses that used propensity scores to adjust for differences in sample characteristics produced the same results as unadjusted analyses.

The results of this study have implications for other community-level HIV prevention interventions. First, these demonstration projects have shown that large-scale communitywide interventions can be implemented successfully in low-income inner-city neighborhoods. Despite a scarcity of resources, community businesses, organizations, and individuals gave of their time and effort to spread HIV prevention messages in their communities. Second, data from this study indicate that many women at risk for HIV infection still were not using condoms, particularly with their main partners, which confirms the necessity for relevant, effective preventive interventions that target women. Third, the results indicate that a community-level intervention can affect women's condom-use behavior, particularly their behavior with regard to communication with main sex partners. As might be expected, the effects of the intervention were most evident for women who had direct exposure to the WIDP materials and messages. Finally, these results support the need for longer-term intensive interventions, as intervention effects began to appear only after 2 years of intervention implementation. To be successful in low-income neighborhoods, interventions need to address social, economic, and cultural issues that affect the target population's access to information and its ability to focus on health-related behaviors. Intervention techniques that can be sustained by community organizations and sources of continued funding for intervention activities need to be explored so that appropriate and repeated HIV prevention messages reach everyone who is at risk. □

Contributors

All of the authors participated in the planning and implementation of the study and in writing the paper. J. L. Lauby wrote and edited the final manuscript and made revisions based on reviewer comments. P. J. Smith designed and conducted the statistical analyses. M. Stark and B. Person wrote sections of the manuscript. B. Person , J. Adams, M. Stark, and J. L. Lauby contributed to the design and implementation of the intervention, design of the questionnaire, and supervision of data collection and analysis.

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